

What is claimed is:

- 210/641 1723
1. / Process for cross-flow filtration of a fluid to produce a flow of concentrate and a flow of filtrate using a filtration device having a plurality of rotating membrane discs mounted on at least first and second hollow shafts, each of the membrane discs having a hollow disc body in fluid communication with the associated hollow shaft and first and second membrane surfaces, the membrane discs mounted on a one of the hollow shafts overlapping the membrane discs mounted on another of the hollow shafts in an overlap area, the process comprising the steps of:
    - rotating the hollow shafts and the membrane discs mounted thereon at a rotational speed;
    - introducing the fluid into at least the overlap area of the filtration device;
    - creating overflow speeds at the membrane surfaces in the range of 1 to 5 m/sec;
    - creating a turbulence between the membrane surfaces of at least two membrane discs in the overlap area;
    - diffusing a portion of the fluid through the membrane surfaces of the membrane discs into the hollow disc body to create a permeate within the hollow disc body and a concentrate exteriorly of the membrane surfaces;
    - collecting the permeate within the hollow shaft from the hollow disc bodies of the membrane discs mounted thereon;
    - discharging the permeate from the hollow shaft as the flow of filtrate; and
    - discharging the flow concentrate from the overlap area at an overpressure.

2. Process according to claim 1, wherein the membrane discs have a rectangular cross section.

3. Process according to claim 1, wherein the membrane discs have a triangular cross section.

5 4. Process according to claim 1, wherein each of the membrane discs have different rotational speeds.

5. Process according to claim 1, further comprising the step of discharging the permeate at a vacuum.

10 6. Process according to claim 5, wherein the vacuum is up to 0.5 bar.

7. Process according to claim 1, wherein the overpressure is 10 to 14 bar.